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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/677,701	09/28/2000	Terrance Dishongh	042390.P9481	3388

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EXAMINER

IP, SIKYIN

ART UNIT	PAPER NUMBER
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1742

DATE MAILED: 11/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/677,701

Applicant(s)

DISHONGH ET AL.

Examiner

Sikyin Ip

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 29-45 is/are pending in the application.
- 4a) Of the above claim(s) 43-45 is/are withdrawn from consideration.
- 5) ☒ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-32,35-42 is/are rejected.
- 7) ☒ Claim(s) 33 and 34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

1. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).
2. Misnumbered claims 27-43 have been renumbered 29-45.

Election/Restriction

3. Newly submitted claims 43-45 are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons:

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 29-42 are, drawn to a method heat treating a thermal dissipation device, classified in class 148, subclass 577+.
- II. Claims 43-45 are, drawn to a microelectronic package, classified in class 439, subclass 485+.

The inventions are distinct, each from the other because:

4. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the process as claimed can be used to make

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other and materially different product such as car brake or golf club impact surface. Or the product as claimed can be made by another and materially different process such as heat sink in USP 4961987 (reference of record, col. 2, lines 27-32 and col. 4, lines 61-68).

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

6. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

7. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 43-45 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

8. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 29-32 and 35-45 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 3184349 to Burwen.

11. The Burwen reference(s) disclose(s) the features including the age-hardenable aluminum alloy for supporting electronic components and the like (col. 1, lines 10-24), claimed method steps of heating to desired/stable temperature (col. 3, lines 31-32), cooling in an ambient temperature (intermediate temperature) while transporting the heated assembly to the quenching hood (col. 3, lines 31-32), and cryogenic cooling an electronic equipment material (col. 3, line 33 to col. 4, line 6). The steps of bringing the quenched assembly back to ambient temperature and connect said assembly to microelectronic device are inherent by process and application of the assembly. Therefore, it would have been obvious to one of ordinary skill in the art to select any steps, including the claimed steps, from the broader steps disclosed in a prior art reference because the prior art reference finds that the entire disclosed features has a suitable utility. Also see MPEP § 2131.03 and § 2123.

12. "Intermediate temperature" in the claims is being interpreted as any temperature below desired heating temperature and above cryogenic temperature.

13. Claims 28-32 and 35-45 are rejected under 35 U.S.C. § 103 as being unpatentable over USP 3184349 to Burwen in view of USP 3185600 to Dullberg and further teaching of USP 20010035557 to Akram and USP 4961987 to Okuno et al.

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14. The claimed subject matter as is disclosed and rejected above by the Burwen except for said assembly is a heat sink with larger grain size after heat treatment and the heat sink material with large grain size would enhance heat dissipation. However, Akram in Figures 1, 3, and 5 and claim 34 disclose(s) heat sink structures and materials include aluminum, copper, etc and their alloys that are substantially same as Burwen's assembly. Dullberg in col. 2, lines 55-70 discloses that Al alloy materials could be treated by cryogenic cooling such as liquid nitrogen. Further Dullberg in col. 3, lines 37-38 teaches to remove the material from the dip tank after the material has reached the quenching medium temperature. This step reads on "immediately bring the material up to room temperature." Therefore, it would have been obvious to one having ordinary skill in the art of the cited references at the time the invention was made to recognize the assembly of Burwen could be heat treated as a heat sink and/or mounting a heat sink in view of the teaching of Akram (Figures 1, 3, and 5). Moreover, since the claimed heat sink has no structure being defined, it reads on the material and structure as disclosed by Burwen. In re Venner, 120 USPQ 193 (CCPA 1958), In re LaVerne, et al., 108 USPQ 335, and In re Aller, et al., 105 USPQ 233.

15. Okuno et al in col. 2, lines 27-32 teach heat sink material, in col. 4, lines 61-69 disclose larger grain would have better thermal conductivity, and in col. 5, lines 42-55 disclose larger grain could be obtained by higher heating temperature. Therefore, ordinary skill artisan would recognize the heated material of Burwen would have grain size changed from small to larger size.

Response to Arguments

16. Applicant's arguments filed August 29, 2003 have been fully considered but they are not persuasive.

17. Applicants argue that Burwen and Akram do not teach the claimed two-step cooling process. But, for example, applicants' attention is directed to Burwen reference which discloses the features including the age-hardenable aluminum alloy for supporting electronic components and the like (col. 1, lines 10-24), claimed method steps of heating (col. 3, lines 31-32), cooling in an ambient temperature (intermediate temperature) while transporting the heated assembly to the quenching hood (col. 3, lines 31-32), and cryogenic cooling an electronic equipment material (col. 3, line 33 to col. 4, line 6). Akram (col. 3, lines 15-52).

18. Applicants argue that Dullberg, and Okuno do not disclose the claimed two-step cooling process. But said references are merely cited for the heat sink material, structures, and grain size effect.

Allowable Subject Matter

Claims 33-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: References of record do not suggest the intermediate temperature at -100°F .

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Conclusion

19. The above rejection relies on the reference(s) for all the teachings expressed in the text(s) of the references and/or one of ordinary skill in the metallurgical art would have reasonably understood or implied from the text(s) of the reference(s). To emphasize certain aspect(s) of the prior art, only specific portion(s) of the text(s) have been pointed out. Each reference as a whole should be reviewed in responding to the rejection, since other sections of the same reference and/or various combination of the cited references may be relied on in future rejection(s) in view of amendment(s).

All recited limitations in the instant claims have been met by the rejections as set forth above.


Applicant is reminded that when amendment and/or revision is required, applicant should therefore specifically point out the support for any amendments made to the disclosure. See MPEP § 2163.06 (a) and 37 C.F.R. § 1.119.

Examiner Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Ip whose telephone number is (703) 308-2542. The examiner can normally be reached on Monday to Friday from 5:30 A.M. to 2:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Roy V. King, can be reached on (703)-308-1146.

The facsimile phone number for this Art Unit 1742 are (703) 305-3601 (Official Paper only) and (703) 305-7719 (Unofficial Paper only). When filing a FAX in Technology Center 1700, please indicate in the Header (upper right) "Official" for papers that are to be entered into the file, and "Unofficial" for draft documents and other communication with the PTO that are not for entry into the file of the application. This will expedite processing of your papers.


SIKYIN IP
PRIMARY EXAMINER
ART UNIT 1742

S. Ip
November 17, 2003